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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/786,469	03/05/2001	Meirion Lewis	124-844	1666
23117	7590	05/04/2004	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			GURZO, PAUL M	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/786,469	Applicant(s) LEWIS ET AL.	
	Examiner Paul Gurzo	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 27-38, 42 and 43 is/are pending in the application.
- 4a) Of the above claim(s) 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-38 and 42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

Newly submitted claim 43 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the apparatus comprising “two detectors, each detector receiving radiation from a different output of the beam combiner, the output of each detector being connected to a differential circuit” had not been previously claimed in the original claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 43 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-38 and 42 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ooi et al. (5,917,628) and further in view of Logan Jr. (5,204,640).

Regarding claims 27 and 42, 628 teaches a laser stabilization apparatus (68) for stabilizing the output (76) from a laser (61) having a frequency, comprising a frequency discriminator apparatus comprising input means (69) for receiving a primary optical input (a) from the laser (61) for producing two primary optical outputs (69a and 69b), and a means for

Art Unit: 2881

introducing a relative delay between the two optical inputs (Fig. 1) (col. 5, line 46 - col. 7, line 48). Fig. 3 also depicts the claimed laser (84), input means (81A), primary optical input (a), two primary optical outputs (c and d), and a means for introducing a relative delay (87). In addition, both figures depict the claimed two combined optical outputs (g and h), and Fig. 1 depicts the claimed detection means for detecting the intensity of the optical outputs and combining the optical outputs into an electrical signal and a means for measuring the difference between the two signals (col. 6, lines 9-29).

628 depicts the use of a feedback means for feeding back the output difference signal (23) from the optical phase detector (20) (Fig. 9), but this means is not connected to the laser (11). However, 640 teaches that one solution to the problem of phase noise in the system is to stabilize the oscillator frequency using a feedback loop (col. 1, lines 18-22) and Fig. 2A and 2B depict this feedback to the laser (22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a feedback means in conjunction with the laser because it will reduce phase noise in the system.

Regarding claims 28-38, it is an obvious design feature to include another frequency discriminator apparatus because this will provide to same desired goal of the operation, and the prior art teaches feedback to the laser, and different points on the laser is an obvious design choice. Further, 628 teaches the use of a modulator (63 and 64) for modulating the phase of one optical input and depicts a coupling means (85) in Fig. 1. 640 teaches the use of a differential amplifier (60), and this is fed back to the laser (Fig. 2a). 628 teaches varying the frequency between a low and high frequency (col. 3, line 16 - col. 4, line 5). It is an obvious variation of the prior art to use optical fibers of different optical path lengths. 628 also teaches that the

Art Unit: 2881

optical modulation is performed at the applied voltage, and it is obvious that this voltage can be a sawtooth-like voltage waveform.

### ***Response to Arguments***

Applicant's arguments filed 2/23/04 have been fully considered but they are not persuasive. Applicant argues that 640 does not teach an optical phase detector or a feedback means to the laser. 640 explicitly teaches a fiber optic line (24) that is connected to a phase detector (28) (col. 4, lines 1-4 and Fig. 2A), therefore this detector (28) is an optical phase detector. In addition, 640 teaches that the output from the filter (30) is summed and this output is applied to the frequency control input of the oscillator (20) (col. 3, lines 60-64). Further, the oscillator modulates the output of the laser (22). Therefore, a feedback means is taught, and this means feeds the signal from the detector (28) to the laser means to affect the laser frequency. Further, Applicant agrees that 640 teaches controlling the frequency of the laser pulses (page 9, paragraph 2). Whether this corresponds to pulse frequency, light frequency, or output frequency is moot because the claims merely address the stabilization of output frequency, which could be any of the above frequencies.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2881

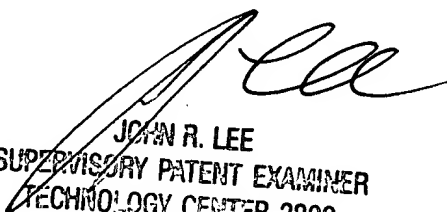
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Gurzo whose telephone number is (571) 272-2472. The examiner can normally be reached on M-Fri. 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached at (571) 272-2477. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

PMG  
April 21, 2004

  
JOHN R. LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800